

Amendments to the Drawings:

The attached sheets of drawings include changes to FIG. 11 and FIG. 13. These sheets replace the original sheets (6/16 and 9/16) including FIGs. 11 and. 13. In FIG. 11, "MINUITES" is changed to-- MINUTES -- in two places. In FIG. 13, step 86, "BM" is changed to --BW--.

Attachments: Two Replacement Sheets

Two Annotated Sheets Showing Changes

REMARKS/ARGUMENTS

In paragraph 1 on page 2 of the Official Action, the drawings were objected to because step 86 of FIG. 13 should use “BW” to represent bandwidth instead of “BM”. In reply, please find enclosed a replacement sheet and an amended sheet showing a change of “BM” to -- BW-- in step 86 of FIG. 13. Also enclosed is a replacement sheet and an amended sheet to change “MINUTES” to -- MINUTE-- in two places in FIG. 10.

In paragraph 2 on page 2 of the Official Action, the disclosure was objected to because on page 14, line 8, “40%%” should be amended to -- 40% --. In reply, the specification has been amended to change “40%%” to -- 40% -- on page 14, line 8. The specification has also been amended to make the following additional corrections. On page 7, line 2, and on page 17, line 1, “system” has been changed to -- server -- for clarity. Also, on page 10, line 21, -- as a function of -- has been inserted to improve the clarity of the sentence.

In paragraph 4 on page 3 of the Official Action, claims 1-26 were rejected under 35 U.S.C. 102(e) as being unpatentable over Mizutani (U.S. Patent 6,115,740). In response, claims 1 and 15 have been cancelled, claims 2 and 16 have been re-written in independent form, claims 1-9 have been amended to depend on claim 2, and claims 17-23 have been amended to depend on claim 16. Applicants respectfully traverse the rejection of claims 10-14 and 24-26, and request reconsideration in view of the following remarks.

The invention is directed to a video file server and a method of operating a video file server. The applicants' claims 2 and 16 as amended are directed to ranking movies with respect

to popularity, and pre-assigning a respective set of data movers for servicing video streams for each movie ranking, wherein the data movers in the respective sets of data movers are configured differently for providing more network interface resources for very popular movies and for providing more local cache memory resources for less popular movies. The applicant's independent claims 10 and 24 are directed to locking in cache a plurality of entire movies, and when there is a need for servicing a more popular movie from the cache and there is insufficient free cache memory for servicing the more popular movie from the cache, transferring the servicing of a less popular movie from the cache to disk storage in order to free cache memory for servicing the more popular movie from the cache.

The policy of the Patent and Trademark Office has been to follow in each and every case the standard of patentability enunciated by the Supreme Court in Graham v. John Deere Co., 148 U.S.P.Q. 459 (1966). M.P.E.P. § 2141. As stated by the Supreme Court:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.

148 U.S.P.Q. at 467.

The problem that the inventor is trying to solve must be considered in determining whether or not the invention would have been obvious. The invention as a whole embraces the structure,

properties and problems it solves. In re Wright, 848 F.2d 1216, 1219, 6 U.S.P.Q.2d 1959, 1961 (Fed. Cir. 1988).

Mizutani (US 6,115,740) discloses a video file server system for dynamically allocating contents and delivering data. (See title.) The video server system has a plurality of video servers having respective contents storing units for storing contents and respective contents delivering units for delivering contents. A management server has a stream supply information managing unit for managing stream supply information relative to the delivery of the contents and a contents dynamic allocating unit for controlling the storage of the contents between the video servers to dynamically allocate contents based on stream supply information from the stream supply information managing unit. (Abstract.) Mizutani says that different kinds of content C0, C1, C2, ... (e.g., different digitally moving image data, col. 1, lines 15-16) can be stored in a video server system. Each video server in the system can deliver a maximum number (Nstrm) of streams. (Col. 1, lines 48-49.) The maximum number of streams of content that can be delivered at one time from an entire video server system may be increased by increasing the number of installed video servers. (Col. 1, lines 30-33.) In order to avoid rejection of a request for the delivery of a content stream C1, it is necessary that the content C1 be stored in the video server beforehand in expectation of access to the content C1. (Col. 1, lines 1-4.) The estimated number of video servers which can be installed (Nvsa) is the sum for all i of P_i/N_{strm} , where P_i represents the maximum number of times that each of the contents is simultaneously accessed per day, and i represents the type of a content. (Col. 2, lines 9-20.)

Mizutani says it has been customary to predict concentrated access to certain contents, estimate the number of video servers to be installed, and statistically allocate appropriate contents in the video servers before the video system is put into service. (Col. 3, lines 1-5.) Mizutani says that this conventional static contents allocation scheme usually results in an excessive estimate of the required number of servers to be installed (col. 3, lines 36-37) because of an incorrect assumption that the maximum numbers P_i of times that the respective contents C_i are simultaneously accessed occur at a common time (col. 3, lines 6-11). Instead, in normal circumstances, different users access different kinds of contents at different times. For example, news programs are popular in the morning, and movies are popular in the evening, and some users prefer to see video programs early in the evening and others late in the evening. (Column 3, lines 30-35.)

Mizutani's solution to the problems of the conventional static contents allocation scheme (col. 3, lines 26-28) is to dynamically allocate the contents (col. 3, lines 48-56). The contents are dynamically allocated by detecting whether at least the number of streams of a content stored in a video server or the predictable number of accesses exceeds a corresponding threshold value or not, and if the number exceeds the threshold value, controlling the storage of the content between the video server or another video server, for thereby dynamically allocating the content. (Column 4, lines 3-11.) Predicted values used by the video file server system for dynamically allocating contents include a predicted maximum number $A(s,t)$ of times that a video server s is simultaneously accessed at a time t . (Col. 6, lines 6-24.) If there is a request from a user at time

t, then the video server whose $A(s,t)$ is the smallest serves as a delivering video server for delivering a requested content. (Col. 6, lines 25-27.) Another predicted value is a number $B(i,t)$ of lacking resources of the content i predicted at the time t . (Col. 6, lines 28-29.) The predicted maximum number $B(i,t)$ is periodically checked for all contents, and the contents are dynamically allocated by being copied, moved, and deleted so that $B(i,t)=0$ as much as possible. (Col. 6, lines 51-54.) Contents are allocated according to a video server having smallest predicted number of simultaneous accesses at a given time. (Col. 14, lines 8-18.)

With respect to the ranking of movies, page 4 of the Official Action says: "Mizutani further teaches ranking movies by using a predicted value $B(i,t)$." As introduced above, however, $B(i,t)$ is a number of lacking resources of the content i predicted at the time t . (Col. 6, lines 28-29.) In addition, ranking is different from a number of lacking resources. The plain meaning of the verb "rank" is "To arrange in a series in ascending or descending order of importance." (See, for example, the definition on the enclosed copy of page 825 of Rudolf F. Graf, Modern Dictionary of Electronics, Butterworth-Heinemann, Newton, Ma 1997.) Such ranking of movies is shown in applicant's FIG. 5.

Page 4 of the Official Action also says: "FIG. 16 of Mizutani discloses that each video server is pre-assigned content, with a number of streams allocated for each content based on anticipated number of streams for each content from clients." This is correct, but it should be understood that FIG. 16 is labeled "PRIOR ART", and, as summarized above, Mizutani finds fault with this prior art static contents allocation scheme (col. 3, lines 26-28) and teaches instead

a method of dynamically allocating contents. It is respectfully submitted that from the viewpoint of FIG. 16 as a point of origin, Mizutani and the applicants of the present invention go off in different directions in an attempt to provide more efficient allocation of video server resources and thus avoid installation of an excessive number of video servers to satisfy client demand.

With respect to applicants' claims 2 and 16 as amended, for example, page 5 of the Official Action says: "Mizutani fails to teach providing more local cache memory for less popular content." Mizutani not only fails to teach the limitations of data movers configured differently for providing more network interface resources for very popular movies and for providing more local cache memory resources for less popular movies, but Mizutani also goes off in a different direction of dynamic allocation so as not to care which contents are popular and which are not, because the invention of Mizutani should dynamically move content between the servers to suit changing conditions. Thus, there is no suggestion in Mizutani that the video servers in the video server system of Mizutani should be configured differently and the content should be ranked for providing more network interface resources for very popular movies and for providing more local cache memory resources for less popular movies.

A reference such as Mizutani should be considered as a whole, and portions arguing against or teaching away from the claimed invention must be considered. *Basch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 230 U.S.P.Q. 416 (Fed. Cir. 1986), cert. denied, 484 U.S. 823 (1987). More importantly, the Official Action cites no references for the claim limitations missing from Mizutani. Where the prior art references fail to teach a claim limitation,

there must be “concrete evidence” in the record to support an obviousness rejection. “Basic knowledge” or “common sense” is insufficient. In re Zurko, 258 F.3d 1379, 1385-86, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001).

With respect to claim 3, the page 5 of the Official Action says: “Mizutani fails to teach whether popular content is kept in its entirety in local cache.” Yet the Official Action cites no prior art reference for this claim limitation.

With respect to claim 5, it is not seen where Mizutani shows the claimed “direct links for transfer of movie data from a data mover set servicing one movie ranking to a data mover set servicing a next higher movie ranking ...”

With respect to claim 7, page 7 of the Official Action says: “Mizutani fails to teach specifically locking in the primary cache a plurality of entire movies.” Yet the Official Action cites no prior art reference for this claim limitation.

With respect to claim 8, page 7 of the Official Action says: “Mizutani fails to teach transferring the servicing of least popular content in the primary cache from the primary cache to disk storage.” Yet the Official Action cites no prior art reference for this claim limitation. Applicant’s claim 8 further specifies “so long as no more than a certain number of video streams are being serviced concurrently from the least popular movie in the primary cache.”

With respect to claim 9, pages 7 to 8 of the Official Action says: "Mizutani fails to specify whether this negotiation between the video server and the client takes place during peak demand." However, it is not seen where the referenced portion of Mizutani discloses the claimed "negotiation for selection of an available movie when resources are not available to select freely any movie in the disk storage for which a vide stream can be started ..." See the applicants' FIGS. 10 and 11 as described in applicants' specification on page 15 line 21 to page 16 line 23. Instead, the referenced portion of Mizutani simply deals with rejecting a client's request when the requested content C0 cannot be delivered to the client.

With respect to claim 10, see the discussion above with respect to applicants' claim 7.

With respect to claim 11, see the discussion above with respect to applicants' claim 8.

With respect to claim 12, see the discussion above with respect to applicants' claim 2.

With respect to claim 13, see the discussion above with respect to applicants' claim 5.

With respect to claim 16, see the discussion above with respect to applicants' claim 2.

With respect to claim 17, see the discussion above with respect to applicants' claim 3.

With respect to claim 19, see the discussion above with respect to applicants' claim 5.

With respect to claim 21, see the discussion above with respect to applicants' claim 7.

With respect to claim 22, see the discussion above with respect to applicants' claim 8.

With respect to claim 23, see the discussion above with respect to applicants' claim 9.

With respect to claim 24, see the discussion above with respect to applicants' claim 7.

With respect to claim 25, see the discussion above with respect to applicants' claim 8 .

With respect to claim 26, see the discussion above with respect to applicants' claim 2.

In view of the above, reconsideration is respectfully requested, and early allowance is earnestly solicited.

Respectfully submitted,

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AVAILABILITY OF MOVIE TITLES

SHOW AVAILABILITY OF THE MOVIE TITLED:
_____(MOVIE TITLE SUPPLIED BY CLIENT)_____

LISTING IN RANK ORDER OF ACCESS AT ANY TIME MOVIES WITH FULL VCR
CAPABILITY

LISTING IN RANK ORDER OF MOVIES SCHEDULED TO START IN NEXT 15
~~9 MINUTES~~
MINUTES

LISTING IN RANK ORDER OF MOVIES SCHEDULED TO START IN NEXT 30
~~9 MINUTES~~
MINUTES

LISTING IN RANK ORDER OF MOVIES SCHEDULED TO START IN NEXT 105
MINUTES

SHOW LISTING IN RANK ORDER OF MOVIES CURRENTLY PLAYING

SHOW LISTING OF OTHER MOVIE TITLES IN DISK STORAGE

SHOW LISTING OF ALL MOVIE TITLES IN ARCHIVE STORAGE

Fig. 10

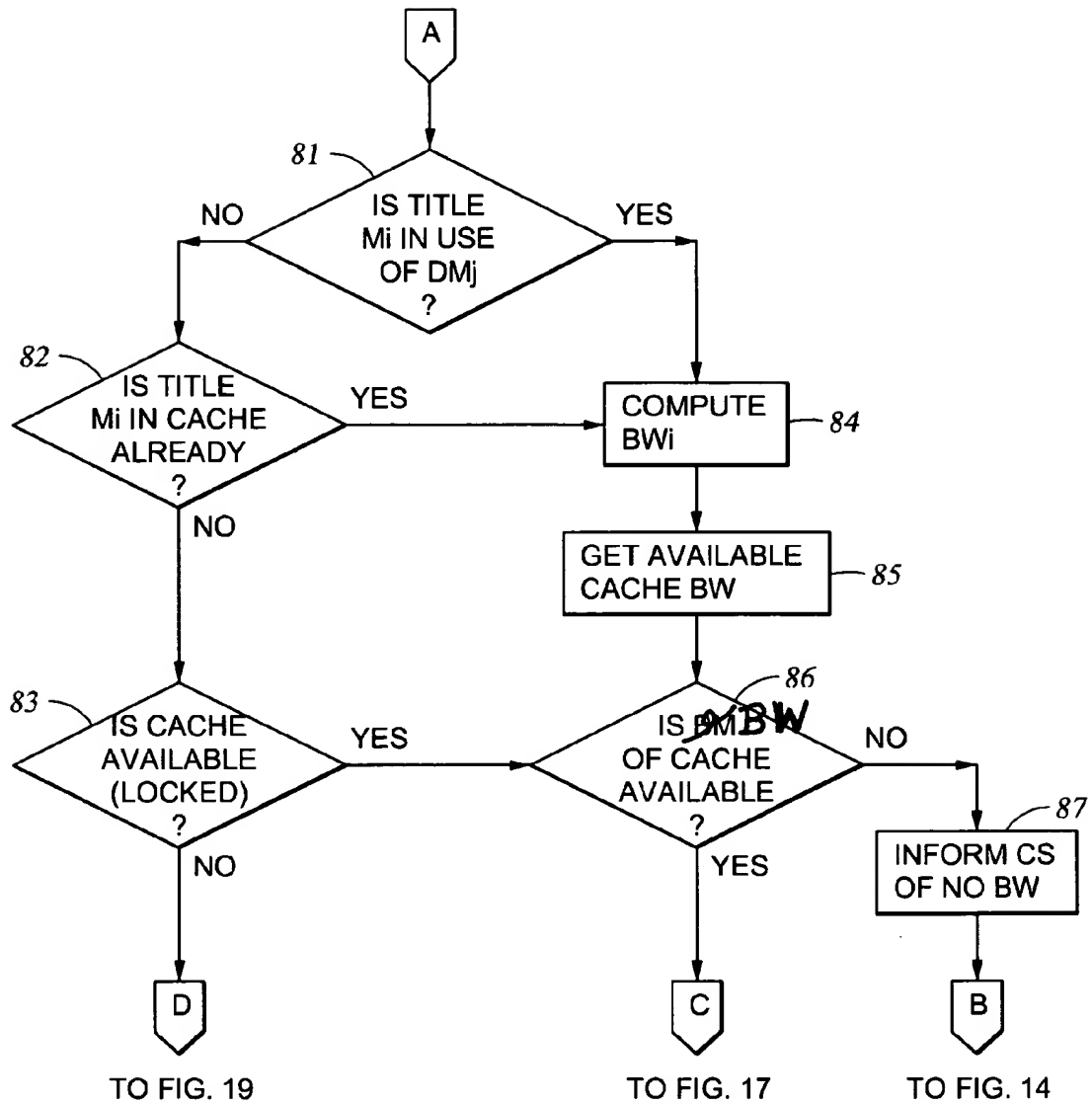


Fig. 13